

Appl. No. 09/369,767
Att. Docket No. 10191/1146
Supplemental Response To Final Office Action of 06/19/2002

Amendments to the CLAIMS:

Without prejudice, this listing of the claims replaces all prior versions and listings of the claims in the present application:

LISTING OF CLAIMS:

1. (Currently Amended) An electrochemical sensor comprising:
a solid electrolyte element including at least one first electrode, at least one second electrode and at least one heating element, the at least one second electrode being situated closer than the at least one first electrode to the at least one heating element, the at least one second electrode being coupled to ground, the at least one first electrode coacting with the at least one second electrode and being negatively polarized;
wherein the second electrode is in a reference duct and wherein the reference duct is situated between the at least one first electrode and the at least one heating element.
2. (Previously Presented) The sensor according to claim 1, further comprising an arrangement for providing a negative operating voltage so that coupling of a heater voltage is effectively blocked and wherein the negative operating voltage is applied to the negatively polarized electrode.
3. (Original) The sensor according to claim 2, further comprising a measurement circuit, the negative operating voltage powering the measurement circuit.
4. (Previously Presented) The sensor according to claim 2, further comprising a circuit arrangement for analyzing a negative probe voltage (U_s), and wherein the negative operating voltage (U_B) powers the circuit arrangement.
5. (Original) The sensor according to claim 1, wherein the at least one second electrode lies in a layer plane of the solid electrolyte element, the at least one second electrode having approximately the same surface size as the at least one first electrode.
6. (Original) The sensor according to claim 1, wherein the at least one second electrode is a reference electrode communicating with a reference atmosphere, and the at least one first

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electrode is a measurement electrode.

7. (Original) The sensor according to claim 1, wherein the solid electrolyte element is a ceramic element.
8. (Original) The sensor according to claim 1, wherein the solid electrolyte element is ZrO_2 .
9. (Canceled).
10. (Original) The sensor according to claim 1, wherein a heating voltage of 12 V is applied to the at least one heating element.
11. (Original) The sensor according to claim 1, wherein the at least one heating element is embedded in an electrical insulator.
12. (Previously Presented) The sensor according to claim 1, wherein a portion of the second electrode extends over the width of a reference duct and additionally acts as a shield against any coupling of heater voltage U_H and wherein the reference duct is situated between the at least one first electrode and the at least one heating element.
13. (Canceled).
14. (Original) The sensor according to claim 1, wherein a heating voltage is applied to the at least one heating element.
15. (Original) The sensor according to claim 1, wherein the solid electrolyte element includes a solid electrolyte tube that is closed on one side.
16. (Original) The sensor according to claim 15, further comprising an arrangement to provide a negative operating voltage so that a coupling of a heater voltage is effectively blocked, the negative operating voltage being applied to the negatively polarized electrode.

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17. (Original) The sensor according to claim 16, further comprising a measurement circuit, the negative operating voltage powering the measurement circuit.

18. (Currently Amended) ~~The sensor according to claim 16, further comprising~~ An electrochemical sensor comprising:

a solid electrolyte element including at least one first electrode, at least one second electrode and at least one heating element, the at least one second electrode being situated closer than the at least one first electrode to the at least one heating element, the at least one second electrode being coupled to ground, the at least one first electrode coacting with the at least one second electrode and being negatively polarized;

an arrangement to provide a negative operating voltage so that a coupling of a heater voltage is effectively blocked, the negative operating voltage being applied to the negatively polarized electrode; and

a circuit arrangement for analyzing a negative probe voltage, the negative operating voltage powering the circuit arrangement;

wherein the solid electrolyte element includes a solid electrolyte tube that is closed on one side.

19. (Original) The sensor according to claim 15, wherein the solid electrolyte element includes a ceramic element.

20. (Original) The sensor according to claim 15, wherein the solid electrolyte element includes ZrO_2 .

21. (Original) An electrochemical sensor arrangement comprising:

a solid electrolyte element including a reference duct, ZrO_2 , at least one first electrode, at least one second electrode, at least one heating element and a reference duct situated between the at least one first electrode and the at least one heating element, the at least one second electrode coupled to ground, having approximately the same surface size as the at least one first electrode, lying in a layer plane of the solid electrolyte element, and situated inside the reference duct closer than the at least one first electrode to the at least one heating element, the at least one first electrode coacting with the at least one second electrode and

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being negatively polarized;

an arrangement to provide a negative operating voltage so that a coupling of a heater voltage is effectively blocked, the negative operating voltage being applied to the negatively polarized electrode;

a measurement circuit, the negative operating voltage powering the measurement circuit; and

a circuit arrangement to analyze a negative probe voltage, the negative operating voltage powers the circuit arrangement.

22. (Original) The sensor according to claim 21, wherein the solid electrolyte element includes a solid electrolyte tube that is closed on one side.